

Reducing NBA Injuries

Richard Hinds

Introduction

Richard Hinds
Data Science Professional

Email

RichardHindsMD@gmail.com

Github

github.com/RH3421

LinkedIn

[LinkedIn.com/in/richardhindsmd](https://www.linkedin.com/in/richardhindsmd)

Outline



Background



Data Understanding



Modeling



Results



Recommendations &
Conclusions



Future Considerations

Background

Background

DeMarcus Cousins

4x NBA All-Star

2x All-NBA Second Team

NBA All-Rookie First Team



Background

POP!



Background

Season ending injuries

Physically devastating

Emotionally taxing

Financially challenging



HOW CAN WE
PREVENT
INJURY
AMONG NBA
PLAYERS?

HOW CAN WE PREVENT INJURY AMONG NBA PLAYERS?

Identification is
the first step in
prevention

Data Understanding

Data Understanding

NBA Injury Dataset from Kaggle

>9 seasons from 2010-2019

17,000 entries

NBA Player Statistics

Biographic

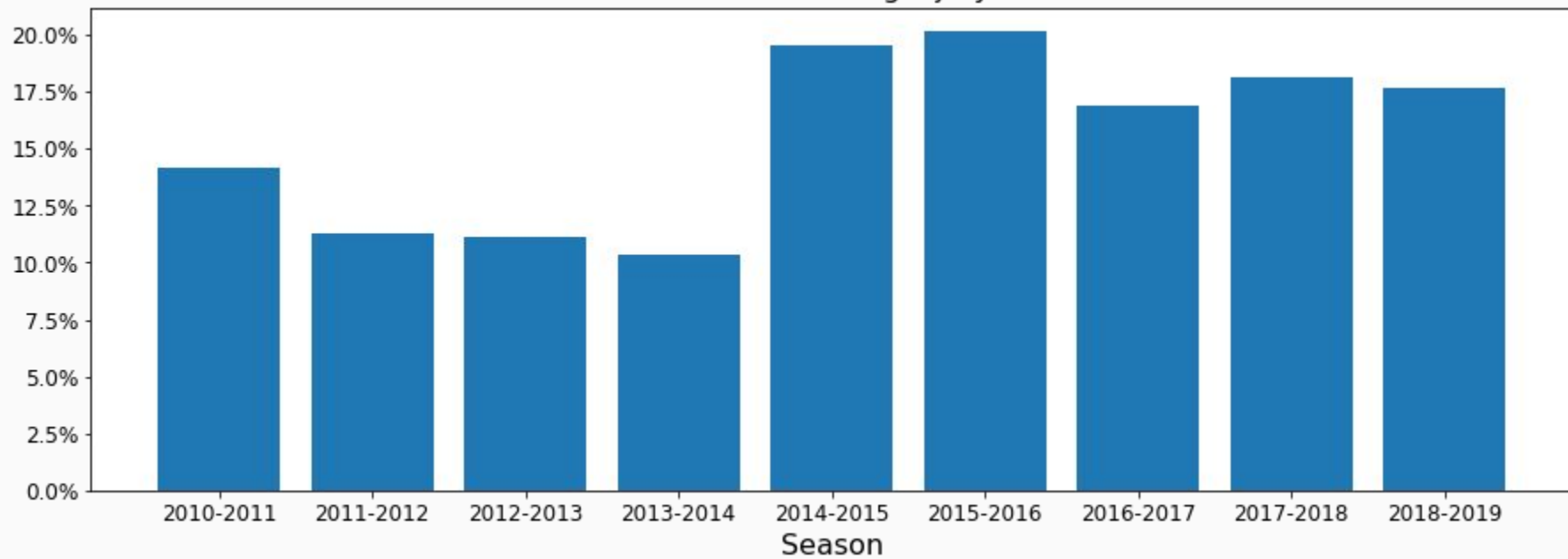
Performance

kaggle



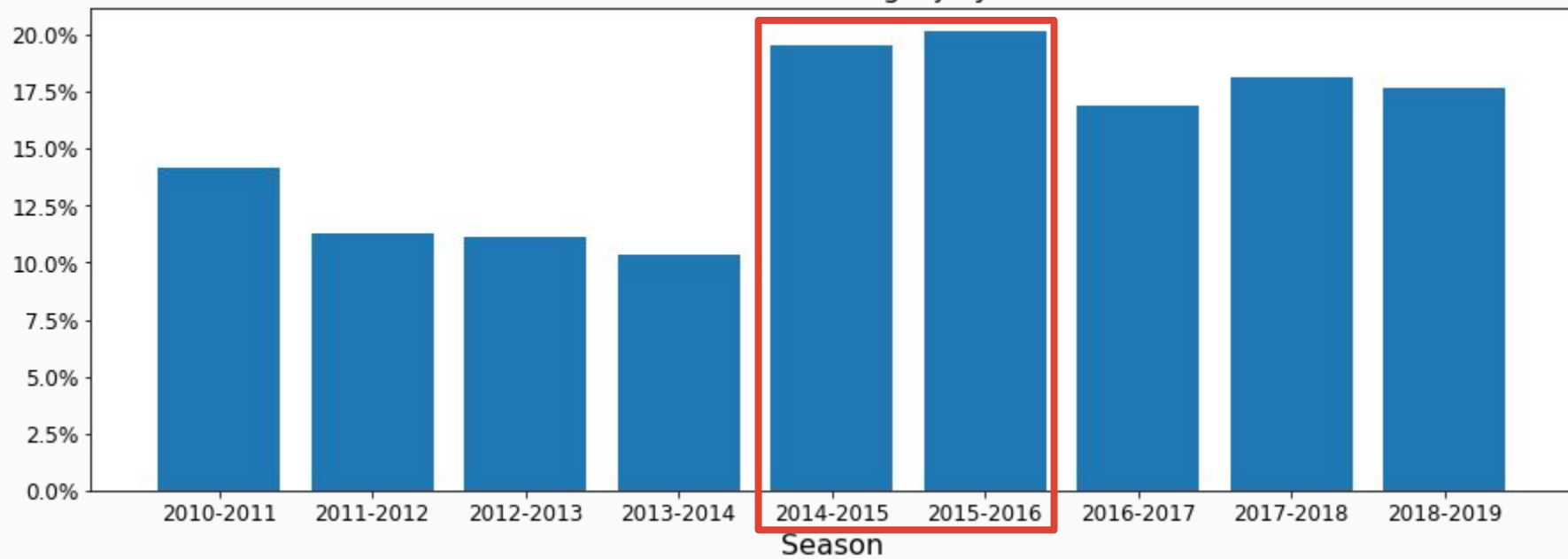
Data Understanding

Incidence of season ending injury in the NBA



Data Understanding

Incidence of season ending injury in the NBA

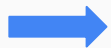


Modeling

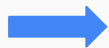
Modeling

kaggle

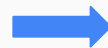
+



Preprocessing



Logistic
Regression
Model



Risk Factor Identification

&

Injury Prediction



No injury



Injury

Results

Results

Logistic Regression: 67% Accuracy

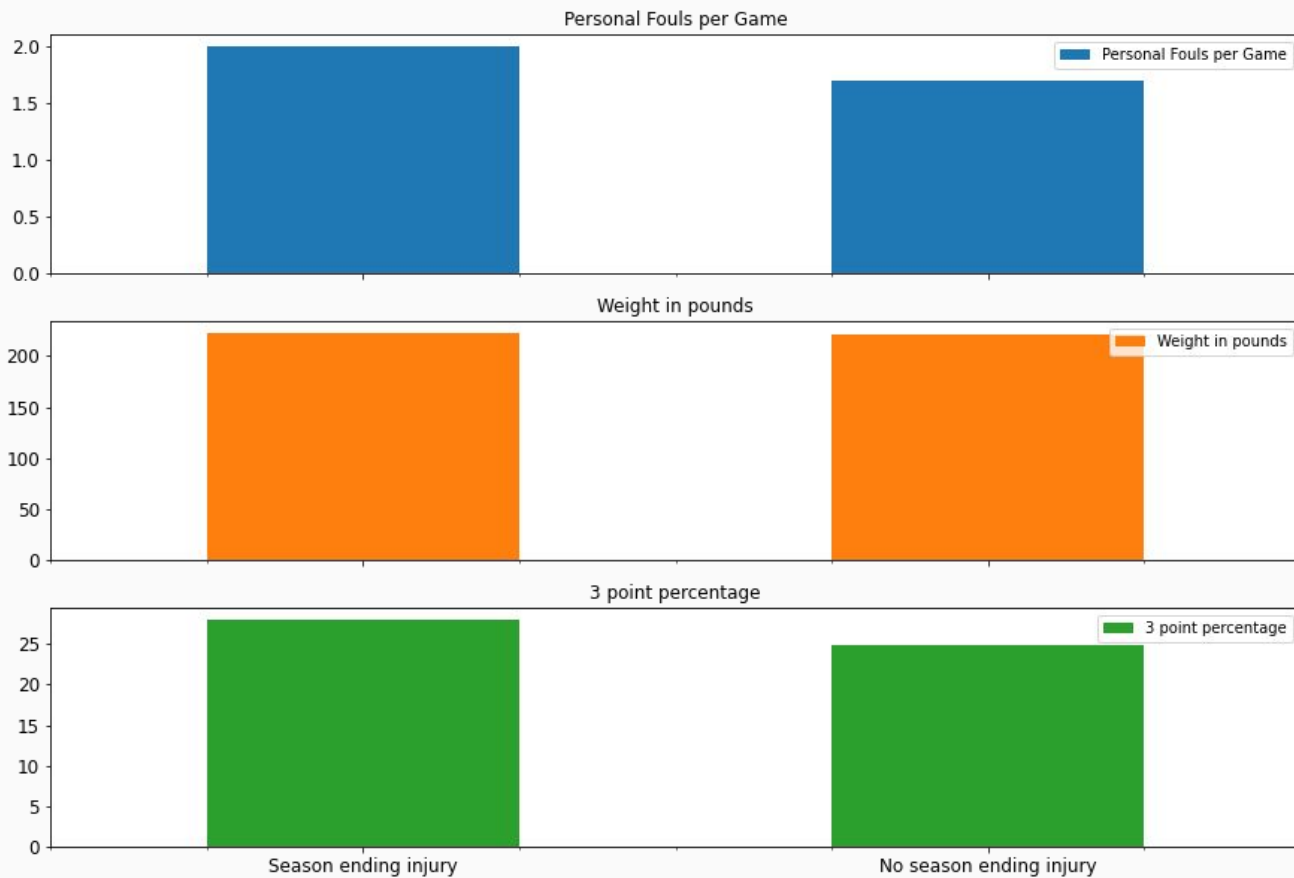
1.57x risk of injury per personal foul

1.23x risk of injury per pound weighed

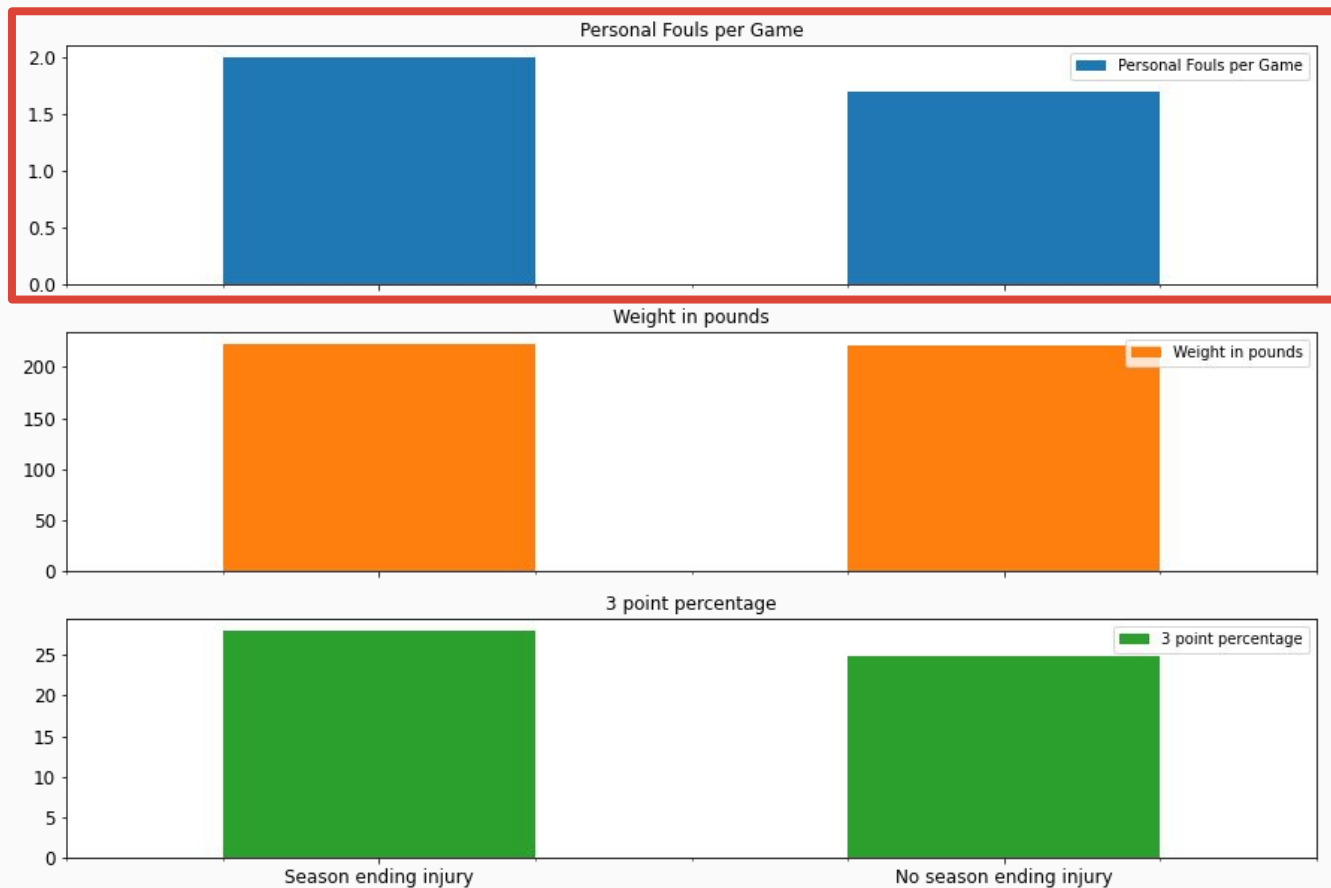
1.2x risk of injury per percent of 3 point accuracy



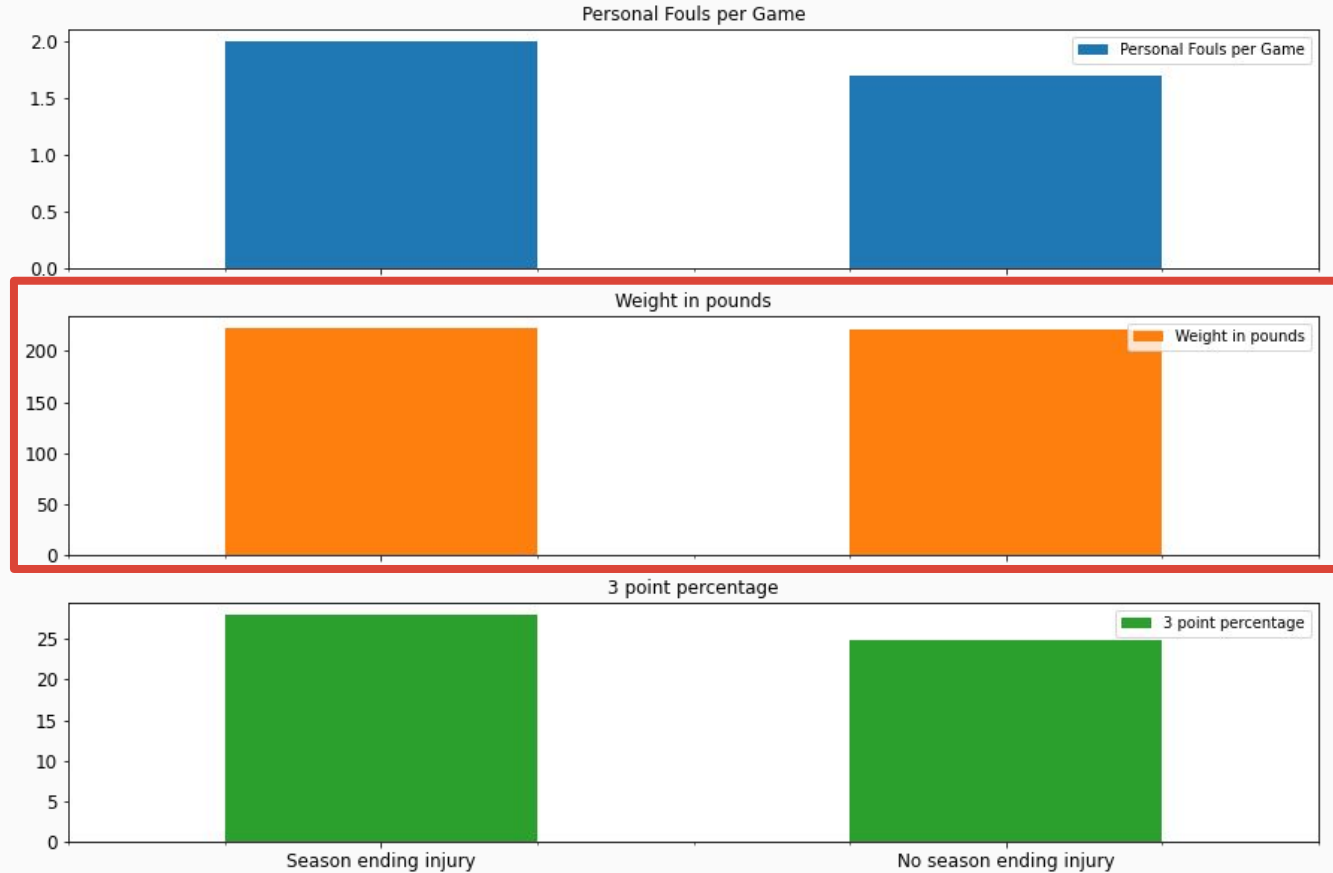
Results



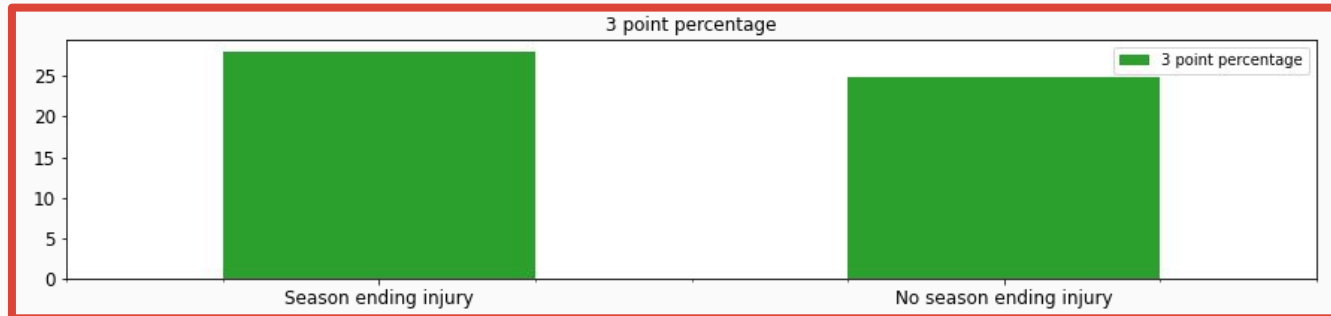
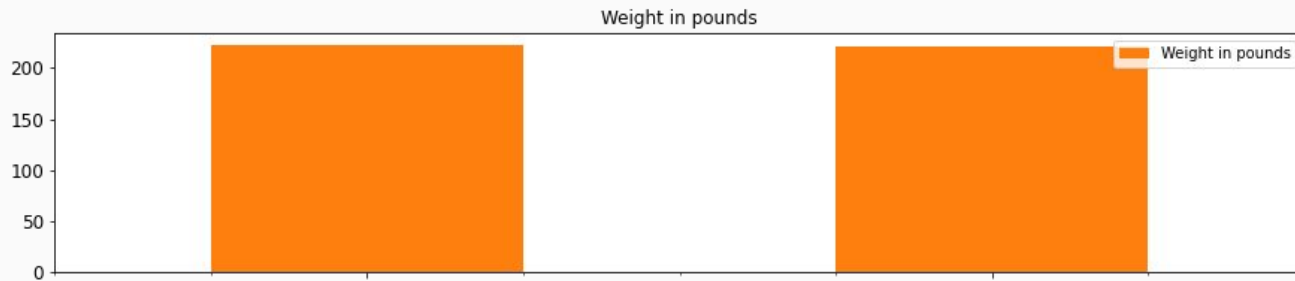
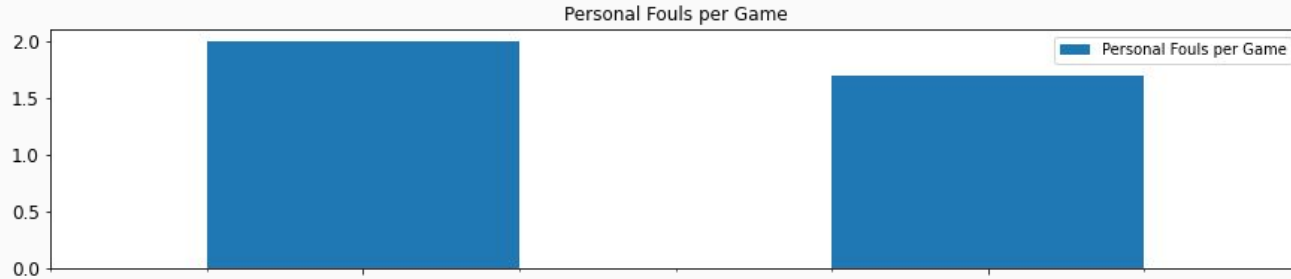
Results



Results



Results



Recommendations & Conclusions

Recommendations & Conclusions

Foul avoidance

Monitor players > 223 pounds

Jumpshot landing training



Recommendations & Conclusions

At risk profile

> 2.0 fouls per game

> 223 pounds

> 28% 3 point accuracy



Cousins' 2016-2017 season

3.9 fouls per game

270 pounds

36.1% 3 point accuracy

Future Considerations

Future Considerations

Matched cohort risk analysis

Injury segmentation

Weekend warrior extrapolation



Thank You

Richard Hinds
Data Science Professional

Email

RichardHindsMD@gmail.com

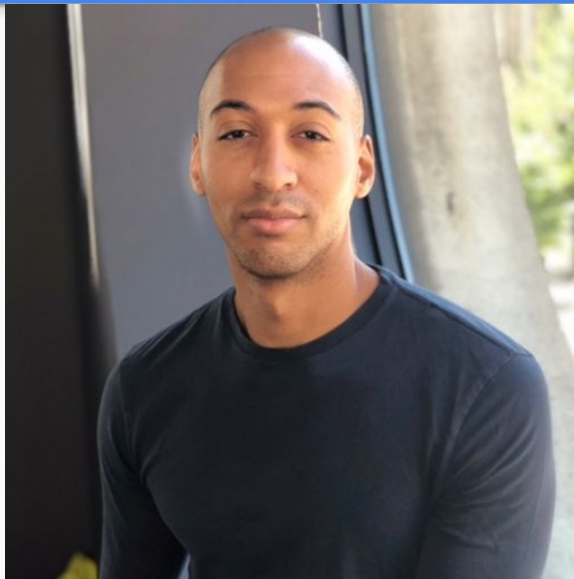
Github

github.com/RH3421

LinkedIn

[LinkedIn.com/in/richardhindsmd](https://www.linkedin.com/in/richardhindsmd)

Introduction



Richard Hinds
Data Science Professional

Email

RichardHindsMD@gmail.com

Github

github.com/RH3421

LinkedIn

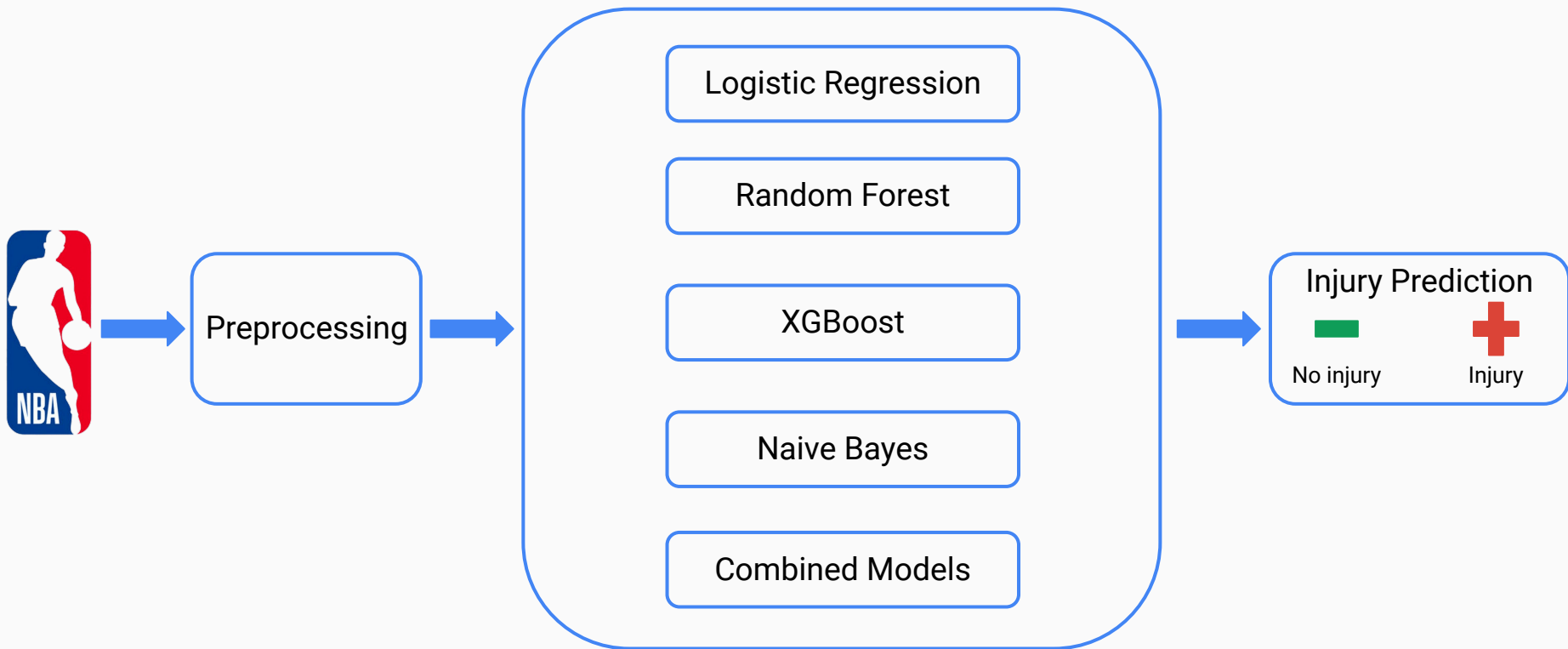
[LinkedIn.com/in/richardhindsmd](https://www.linkedin.com/in/richardhindsmd)

APPENDIX

Results

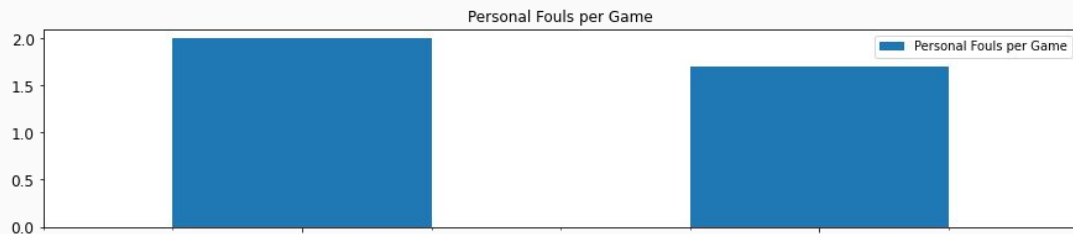
Model	Accuracy	AUC	f1_score
Random Forest	90%	96%	90%
XGBoost	90%	96%	90%
Combined Models	80%	88%	80%
Logistic Regression	67%	73%	66%

Modeling

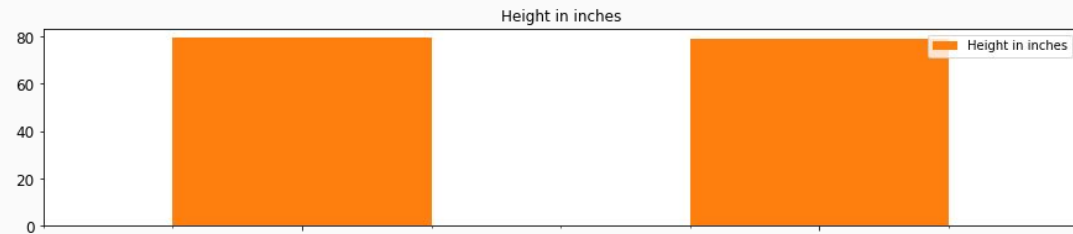


Conclusions & Recommendations

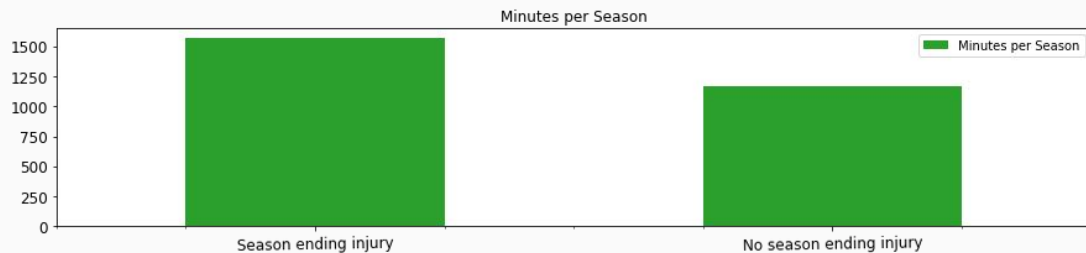
2.0 vs 1.7 fouls per game



79.4 vs 79.1 inches tall



1570 vs 1164 minutes per season



Recommendations & Conclusions

At risk profile

2.0 fouls per game

> 223 pounds

> 28% 3 point accuracy



Cousins' 2017-2018 season

3.8 fouls per game

270 pounds

35.4% 3 point accuracy

Conclusions & Recommendations

2017-2018 season

3.8 fouls per game

270 pounds

35.4% 3 point accuracy



2021-2022 season

2.9 fouls per game

270 pounds

30.3% 3 point accuracy